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Bors et al.

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(54) **MOUNTING SYSTEM FOR PLUMBING FIXTURE FITTING**

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E03C 1/04 (2006.01)

(52) **U.S. Cl.**
CPC ***E03C 1/0401*** (2013.01)

(58) **Field of Classification Search**
CPC E03C 1/0403; E03C 1/0401
USPC 4/675–678, 695
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,487,089	A *	12/1984	Harwood	G05G 5/16 74/531
4,989,633	A	2/1991	Humpert et al.	
5,465,749	A	11/1995	Sauter et al.	
5,515,882	A	5/1996	Hennis	
5,950,663	A	9/1999	Bloomfield	
6,209,153	B1	4/2001	Segien, Jr.	
6,334,226	B1	1/2002	Tokunaga et al.	
6,370,712	B1	4/2002	Burns et al.	
6,405,749	B1 *	6/2002	Bloom	E03C 1/0401 137/359
6,431,610	B1 *	8/2002	Ohirano	E03C 1/0403 137/15.09
6,631,730	B1	10/2003	Bloom et al.	
7,003,818	B2	2/2006	McNerney et al.	
7,162,755	B2	1/2007	Mintz et al.	
7,540,300	B2	6/2009	Thomas et al.	
7,658,202	B2	2/2010	Mueller et al.	
7,979,929	B2	7/2011	Vogel et al.	
2009/0000026	A1	1/2009	Hanson	
2011/0073205	A1 *	3/2011	Marty	E03C 1/0403 137/801

* cited by examiner

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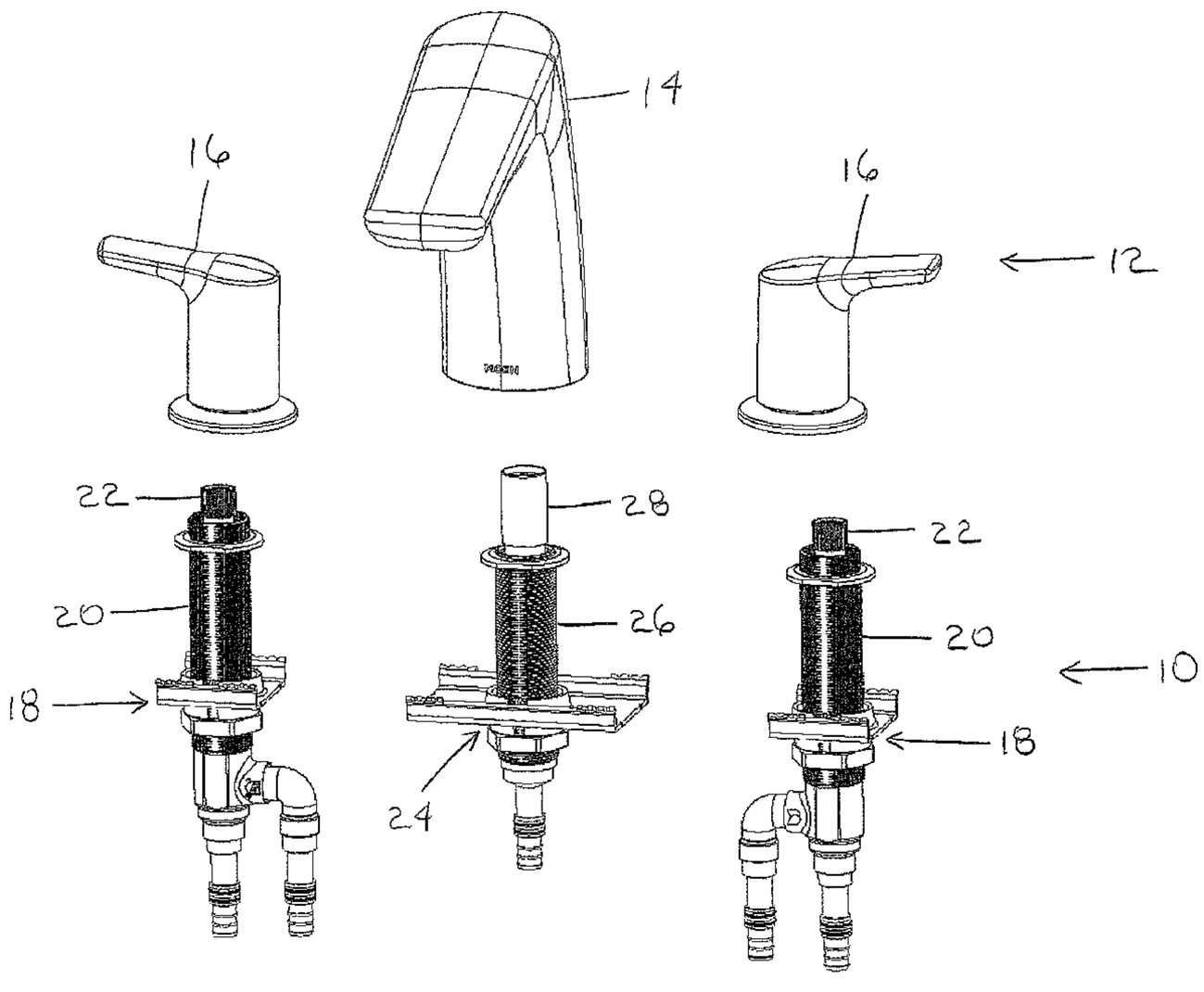
(57) **ABSTRACT**

The present invention provides a mounting system for a plumbing fixture fitting that provides a secure mounting even when the mounting conditions are not optimal.

20 Claims, 9 Drawing Sheets



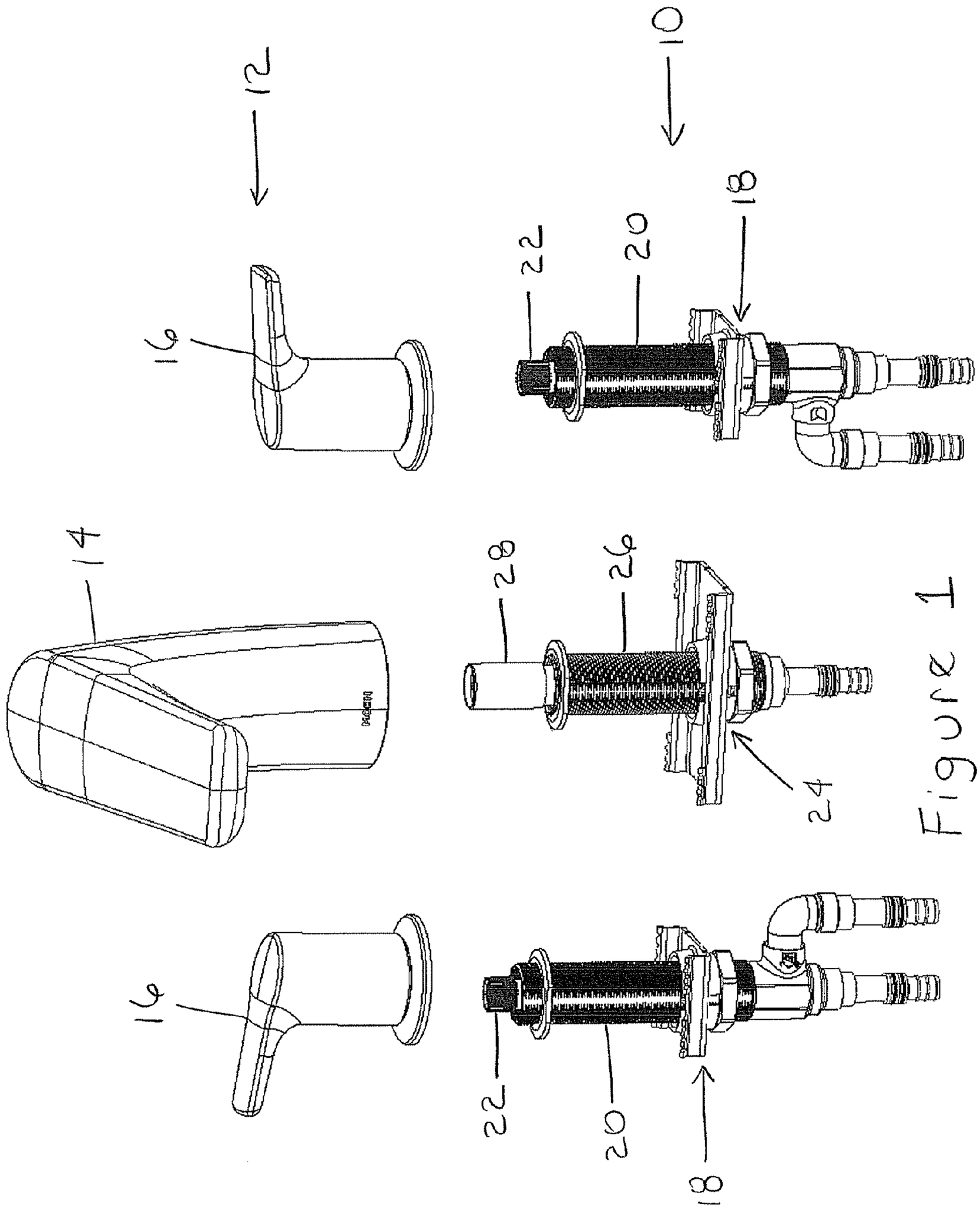


Figure 1

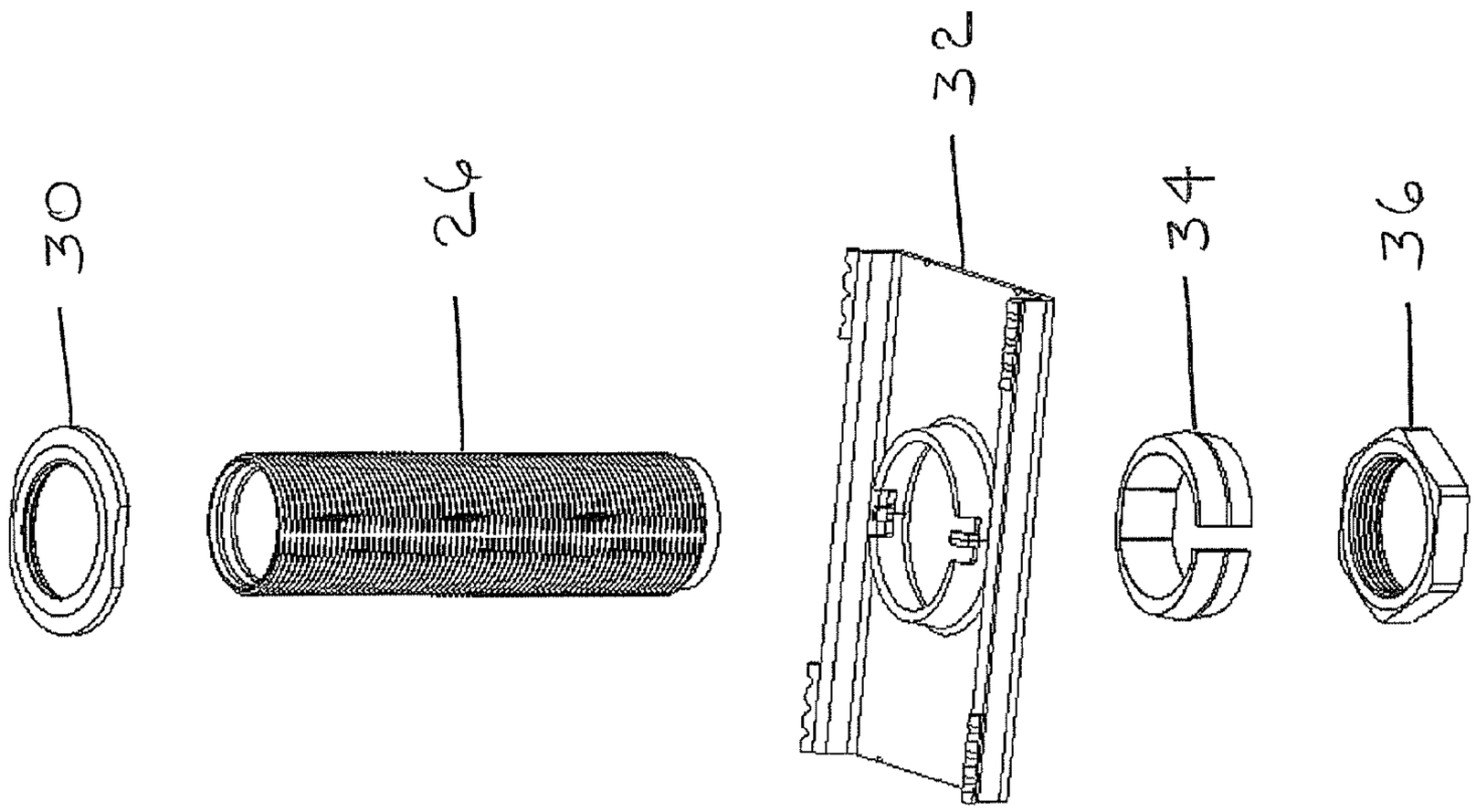


Fig. 2

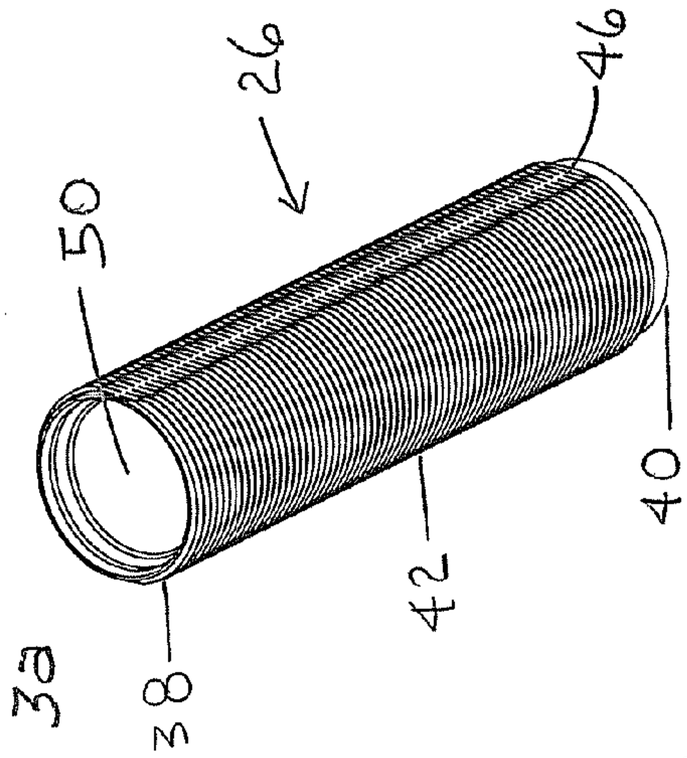


Fig. 3a

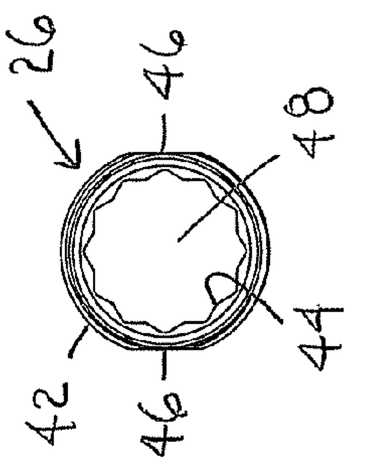


Fig. 3d

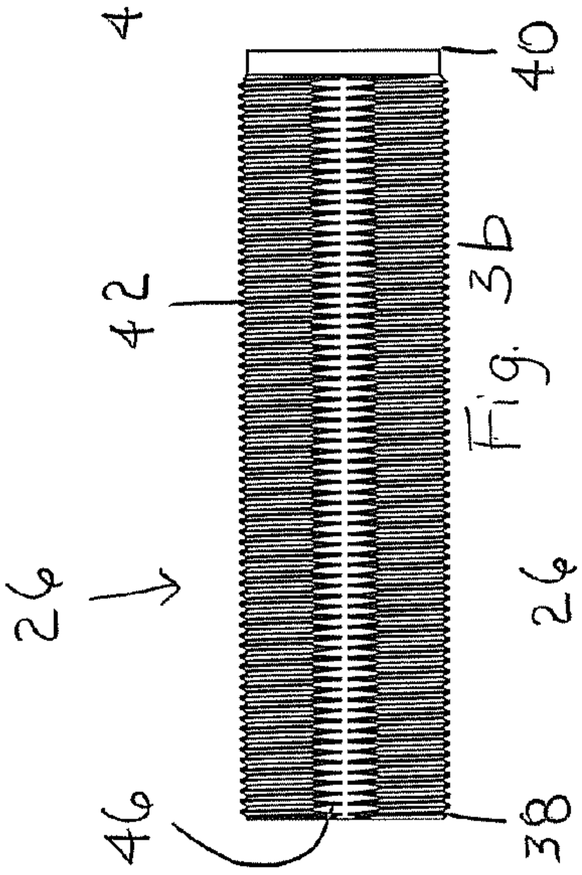


Fig. 3b

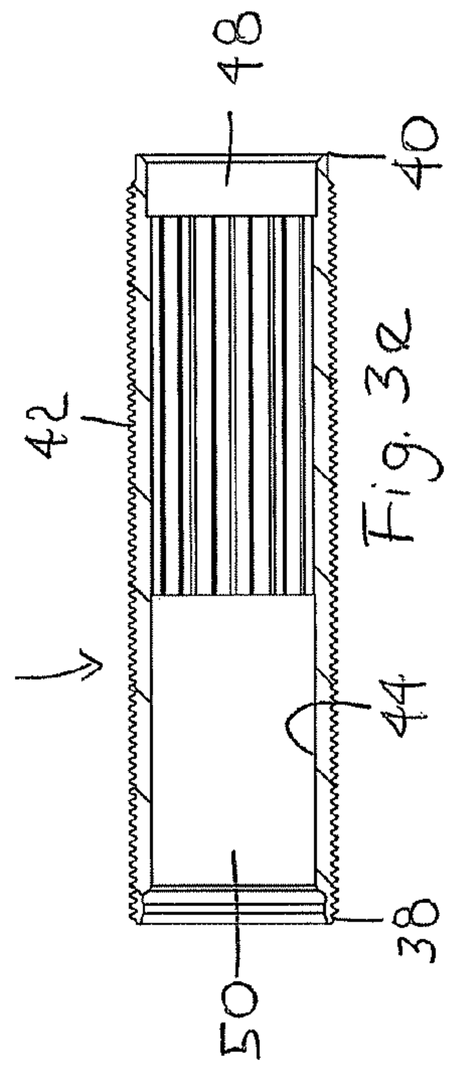


Fig. 3e

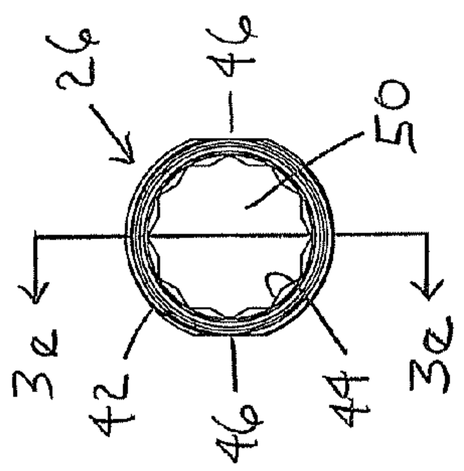


Fig. 3c

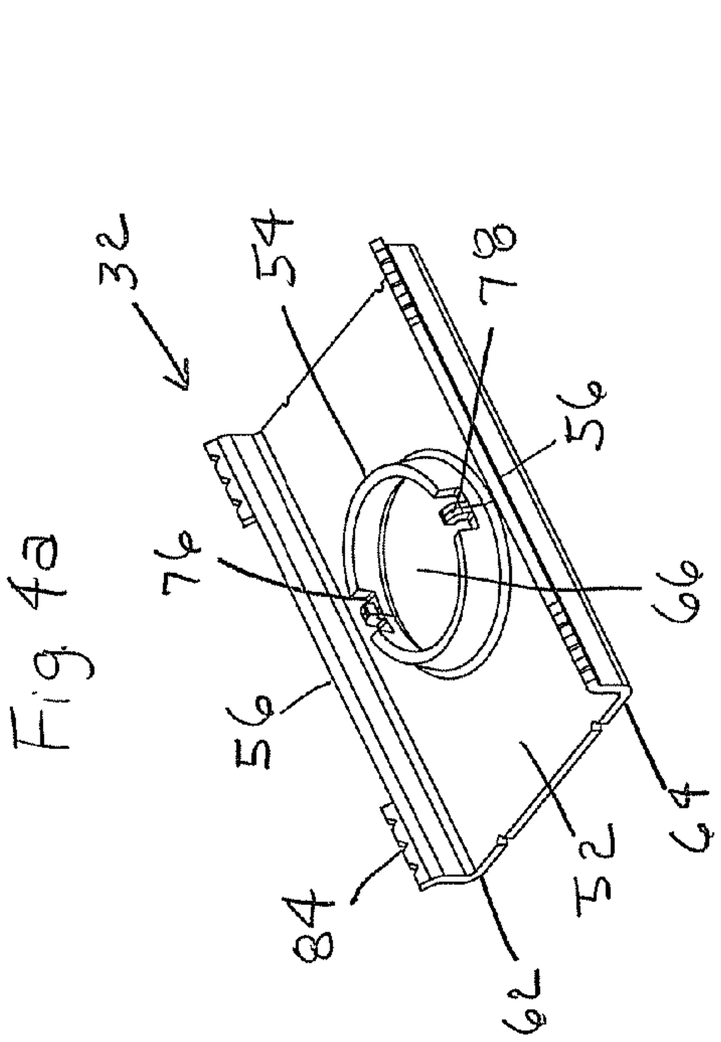


Fig. 4a

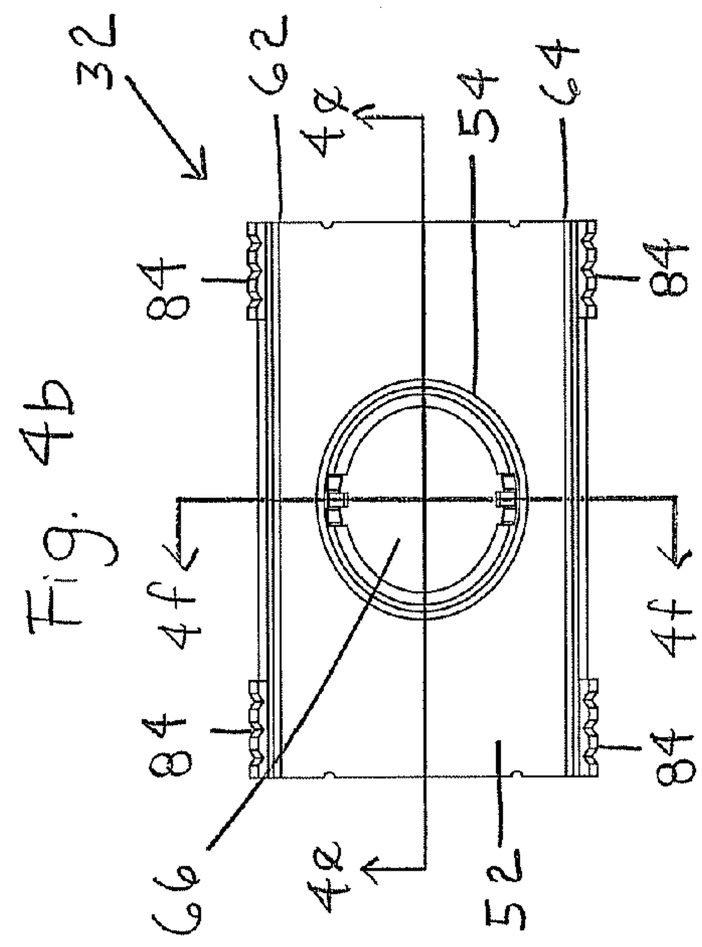


Fig. 4b

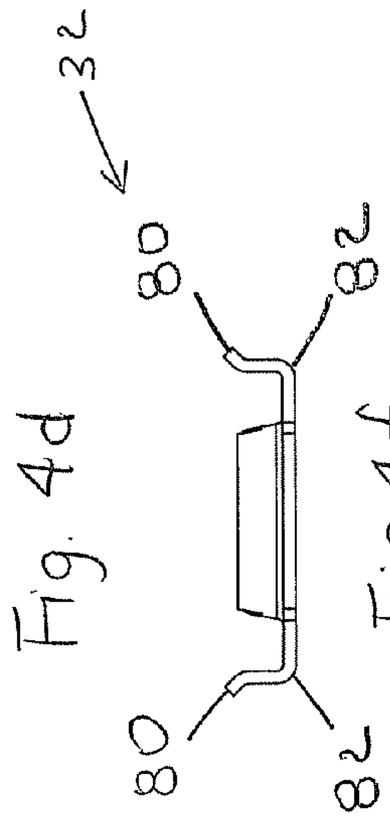


Fig. 4d

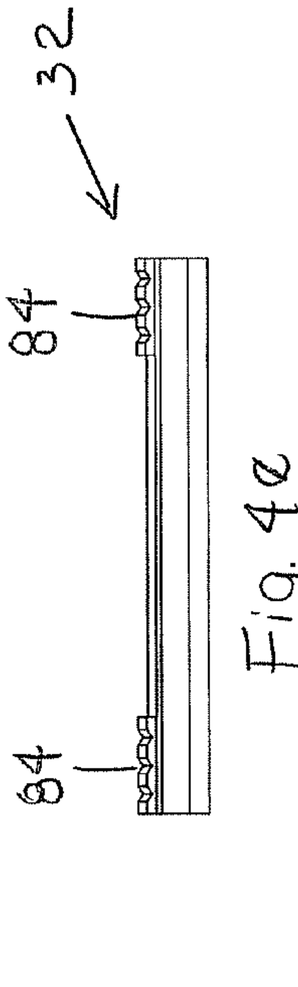


Fig. 4c

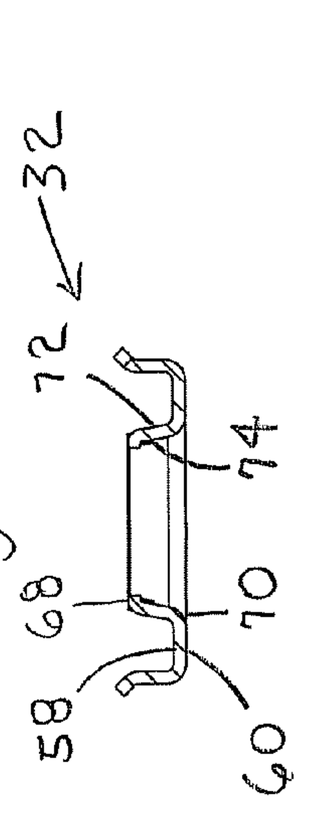


Fig. 4f

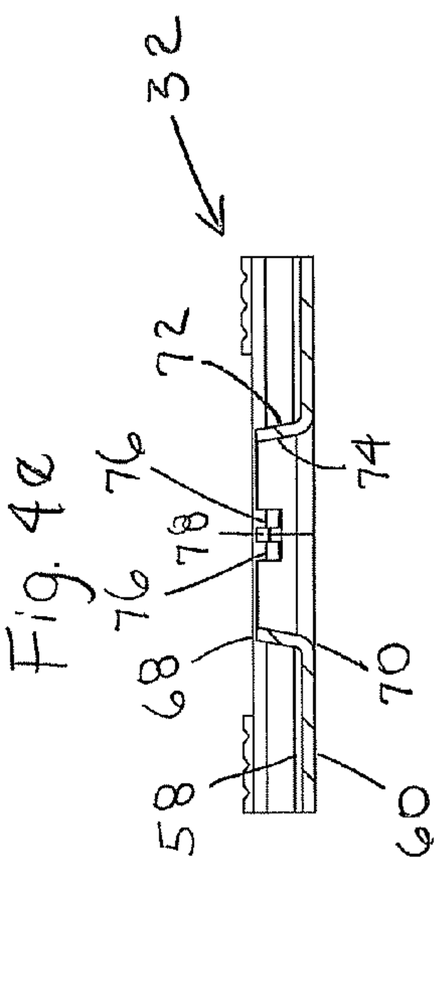


Fig. 4e

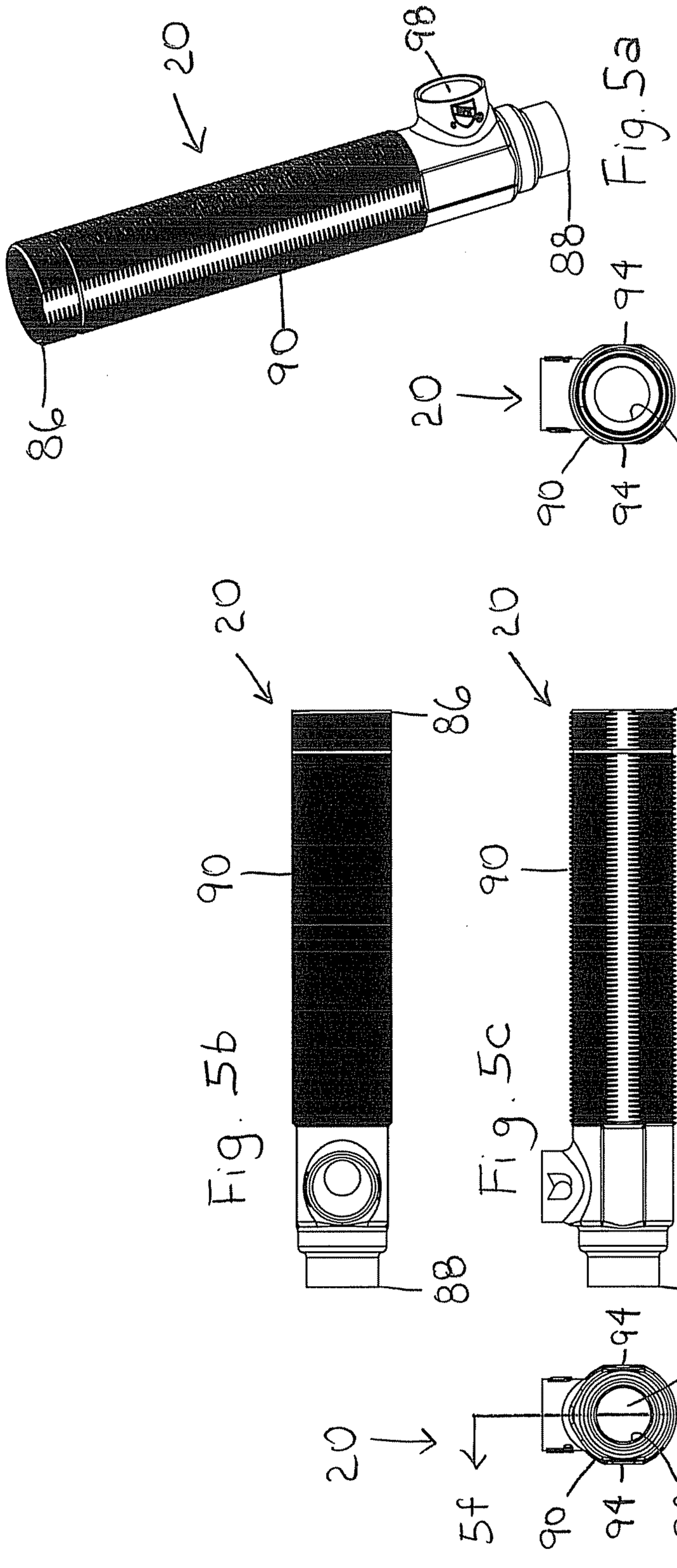


Fig. 5a

Fig. 5b

Fig. 5c

Fig. 5d

Fig. 5e

Fig. 5f

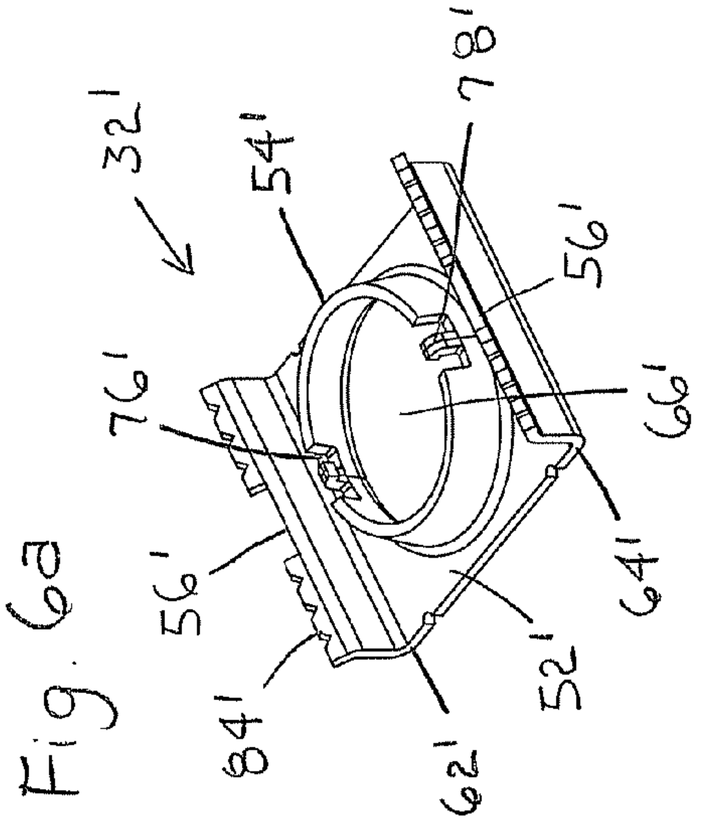


Fig. 6a

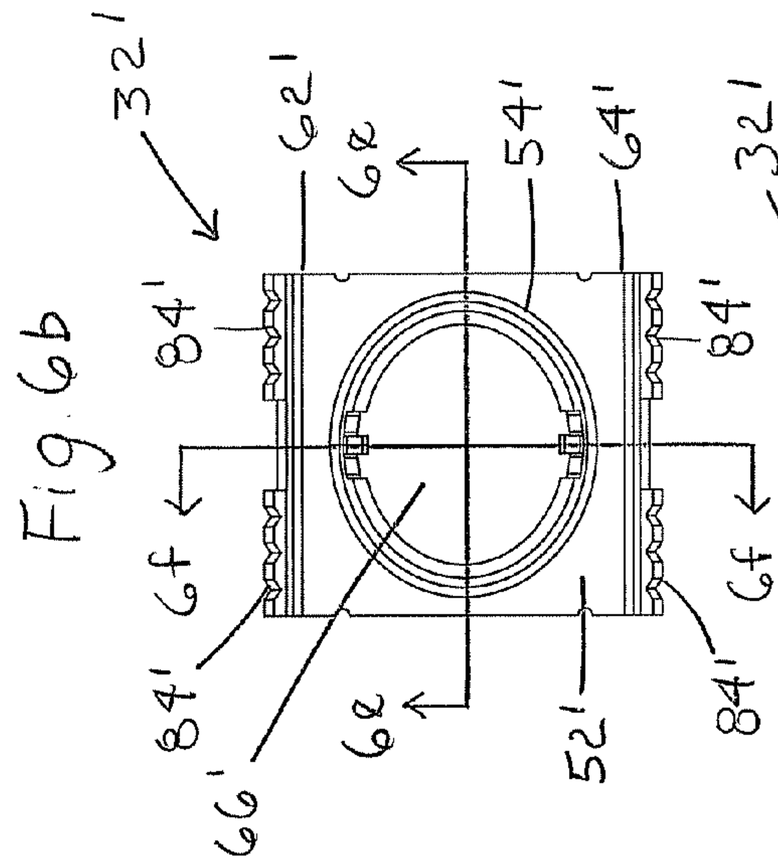


Fig 6b

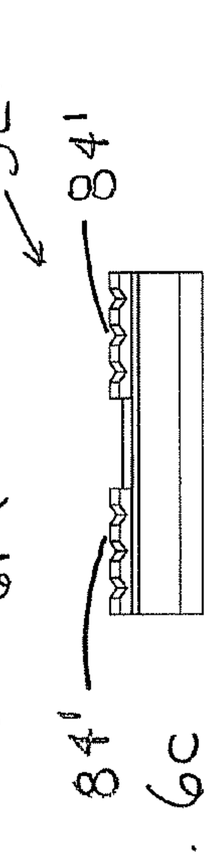


Fig. 6c

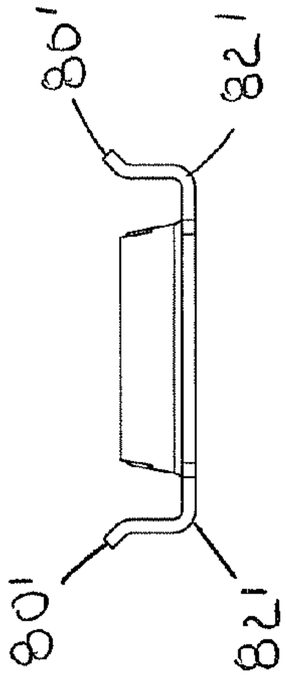


Fig. 6d

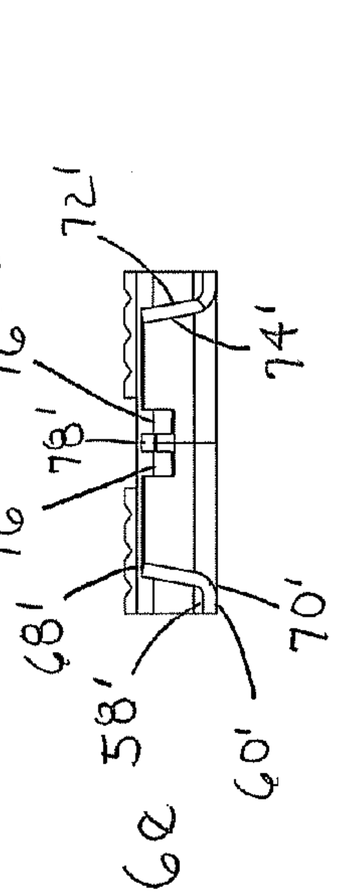


Fig. 6e

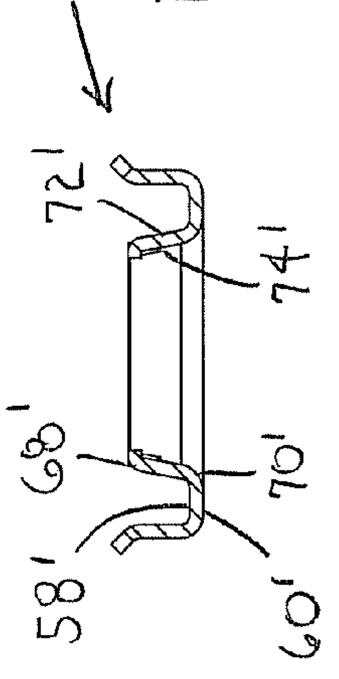


Fig. 6f

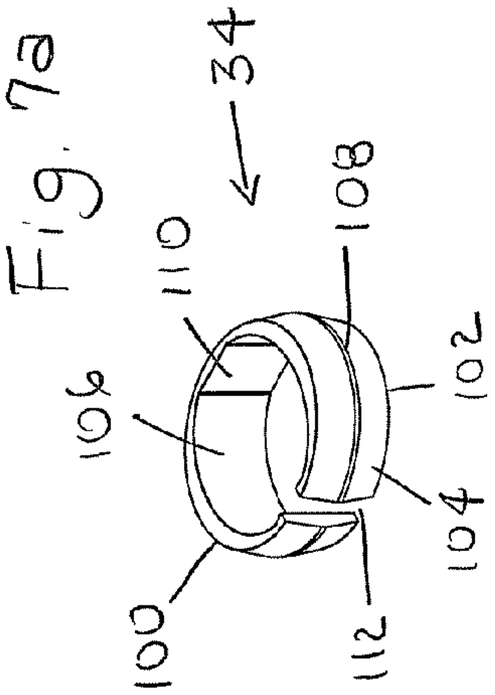


Fig. 7a

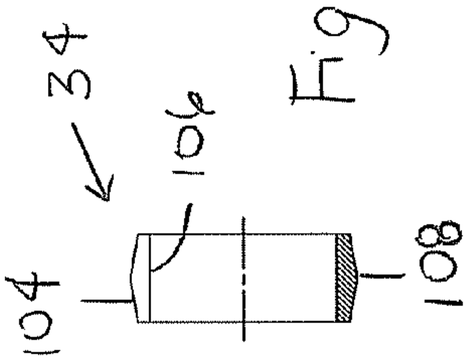


Fig. 7g

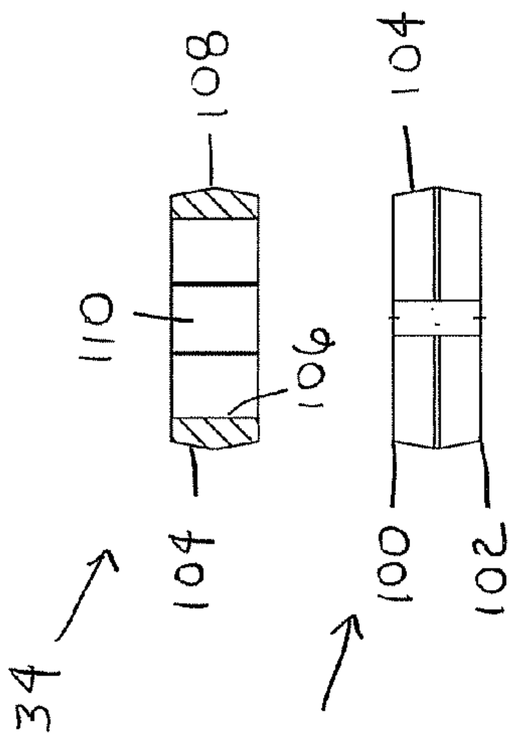


Fig. 7a

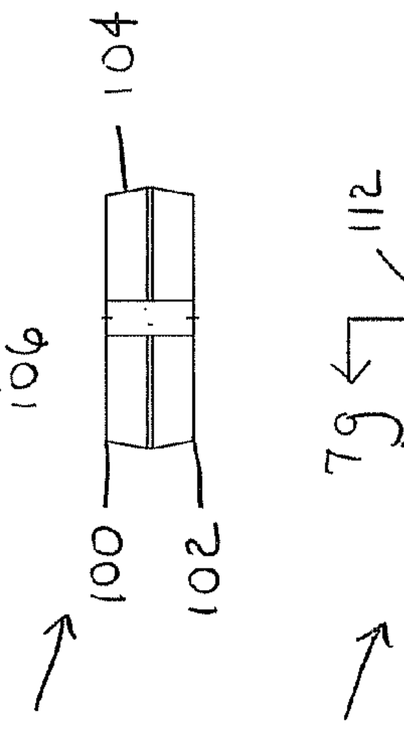


Fig. 7c

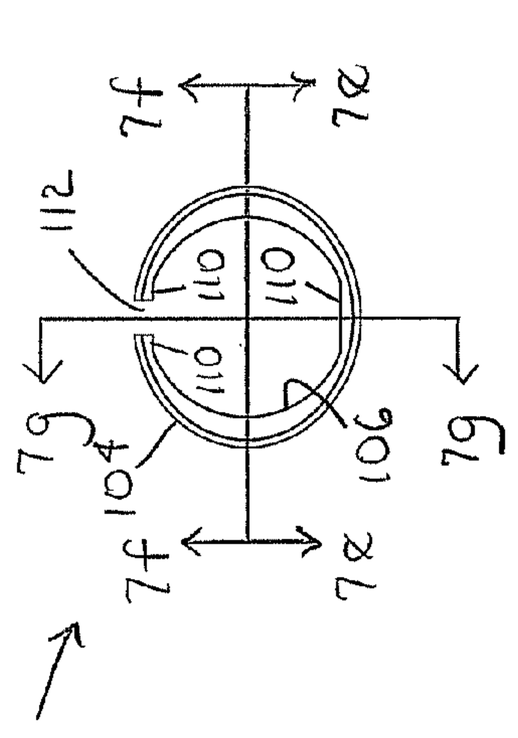


Fig. 7b

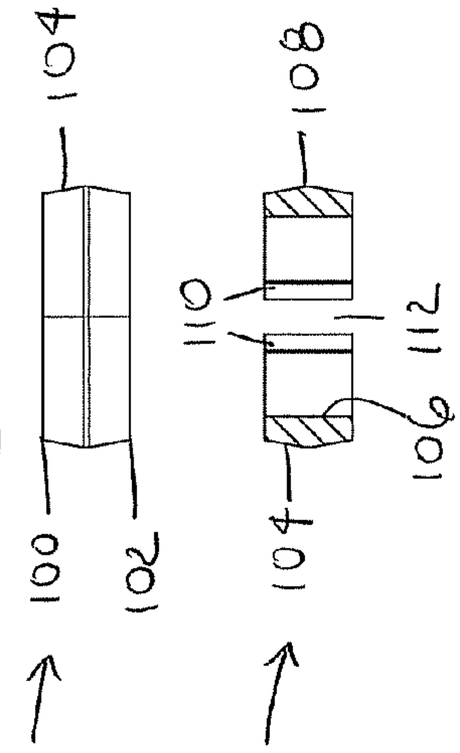


Fig. 7d

Fig. 7f

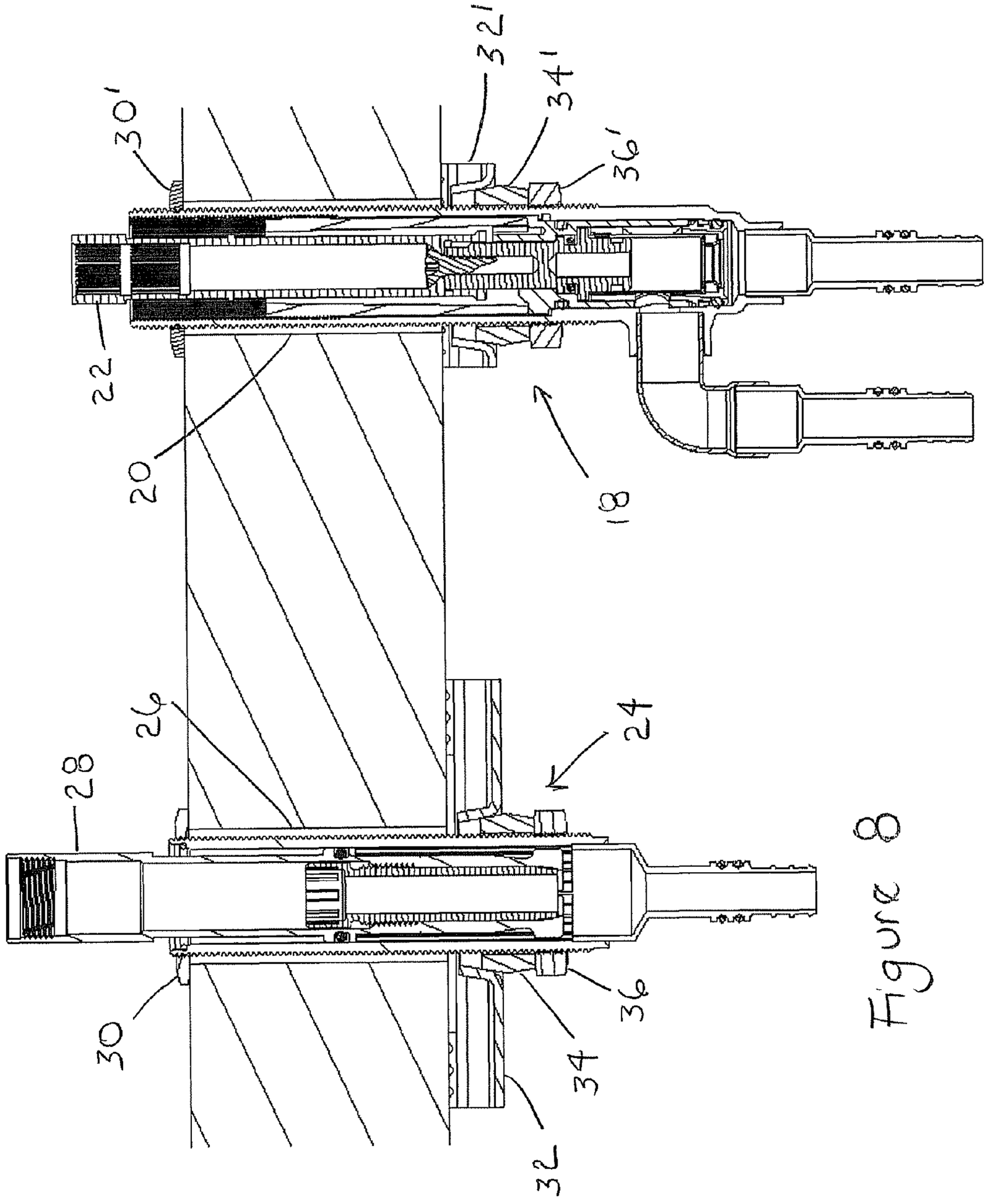


Figure 8

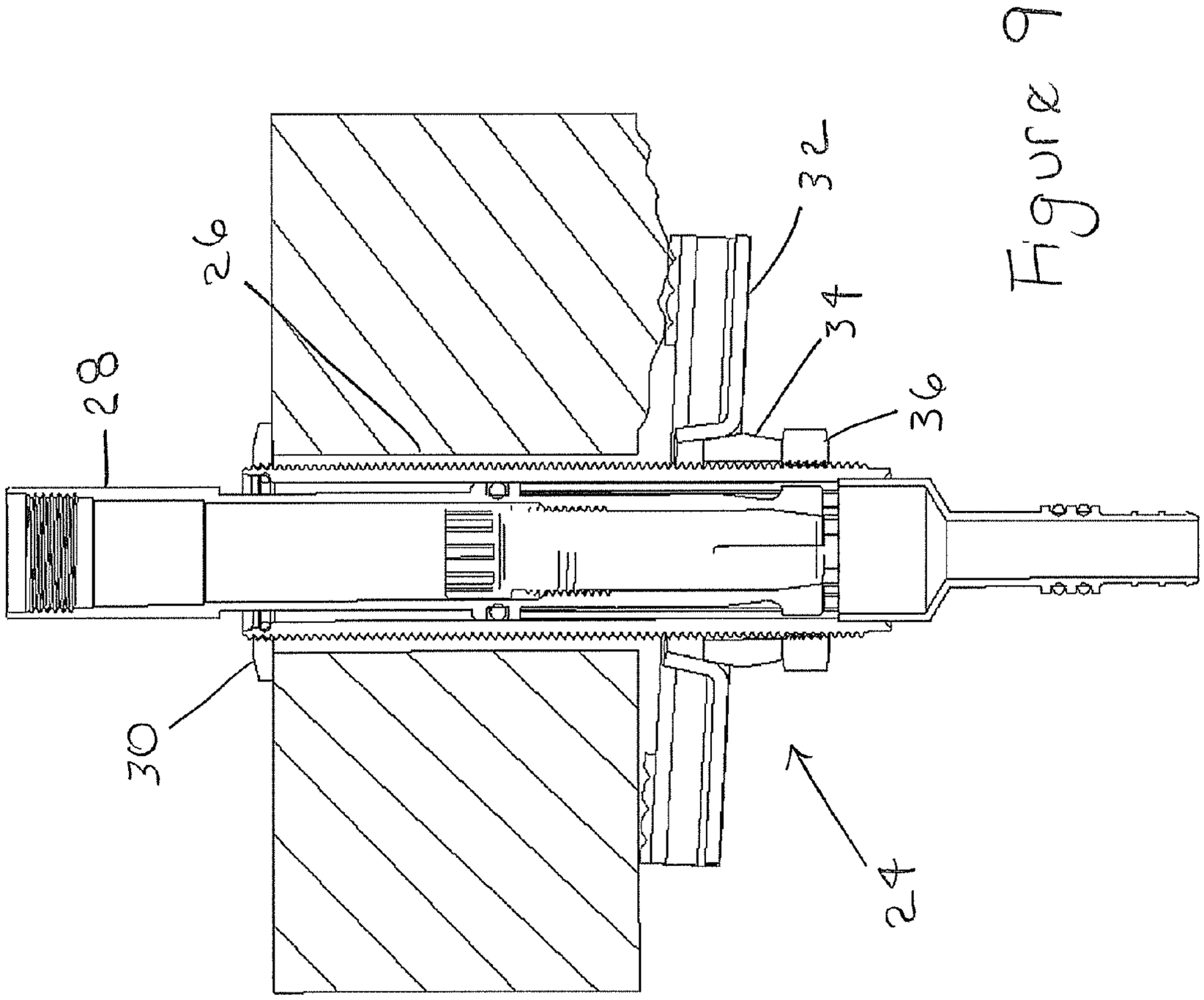


Figure 9

MOUNTING SYSTEM FOR PLUMBING FIXTURE FITTING

FIELD

The present invention relates generally to a mounting system for a plumbing fixture fitting, and, more particularly, to a mounting system for a plumbing fixture fitting that provides a secure mounting even when the mounting conditions are not optimal.

BACKGROUND

When installing a plumbing fixture fitting, such as a faucet, the underside or backside of the mounting surface needs to be even in order for the faucet components, such as a spout and/or a handle, to be securely mounted to the mounting surface. If the underside or backside of the mounting surface is uneven, the faucet components may not be securely mounted to the mounting surface.

SUMMARY

The present invention provides a mounting system for a plumbing fixture fitting that provides a secure mounting even when the mounting conditions are not optimal.

In an exemplary embodiment, the mounting system includes a housing, a bracket, and a bushing. The housing includes a top end and a bottom end. The top end is operable to connect to a plumbing fixture fitting component. The bottom end is operable to connect to a water line. The housing includes an outer surface and an inner surface. The bracket includes a base portion and a protrusion. The base portion has a top side and a bottom side. The base portion has an opening extending from the top side through the bottom side. The opening has a perimeter. The protrusion extends upwardly from the top side of the base portion around at least a portion of the perimeter of the opening in the base portion. The protrusion has a top side and a bottom side. The protrusion has an outer surface and an inner surface. At least a portion of the inner surface of the protrusion tapers inwardly toward the top side. The bushing has a top side and a bottom side. The bushing has an outer surface and an inner surface. At least a portion of the outer surface of the bushing tapers inwardly toward the top side. The bracket is operable to be slid on the housing until at least a portion of the bracket abuts an underside of a mounting surface. The bushing is operable to be slid on the housing and into the protrusion on the bracket. The interaction of the tapered protrusion on the bracket with the tapered bushing enables the bracket to pivot about the bushing.

In an exemplary embodiment, the mounting system includes a bracket and a bushing. The bracket includes a base portion and a protrusion. The base portion has a top side and a bottom side. The base portion has an opening extending from the top side through the bottom side. The opening has a perimeter. The protrusion extends upwardly from the top side of the base portion around at least a portion of the perimeter of the opening in the base portion. The protrusion has a top side and a bottom side. The protrusion has an outer surface and an inner surface. At least a portion of the inner surface of the protrusion tapers inwardly toward the top side. The inner surface of the protrusion is generally non-circular. The bushing has a top side and a bottom side. The bushing has an outer surface and an inner surface. At least a portion of the outer surface of the bushing tapers inwardly toward the top side. The outer surface of the bushing is generally non-circular. The bushing has a split. The bracket is operable to be slid on a housing for a plumbing fixture fitting until at least a portion of the bracket abuts an underside of a mounting surface. The bushing is operable to be slid on the housing and into the protrusion on the bracket. The split in the bushing enables the bushing to be compressed and move further into the protrusion. The interaction of the tapered protrusion on the bracket with the tapered bushing enables the bracket to pivot about the bushing. The interaction of the non-circular protrusion on the bracket with the non-circular bushing resists rotation between the bracket and the bushing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded perspective view of a mounting system for a plumbing fixture fitting according to an exemplary embodiment of the present invention;

FIG. **2** is an exploded perspective view of components of the mounting system of FIG. **1**;

FIGS. **3***a*-**3***e* are views of a shank housing for use in the mounting system of FIG. **1**-FIG. **3***a* is a perspective view, FIG. **3***b* is a side elevational view, FIG. **3***c* is a top plan view, FIG. **3***d* is a bottom plan view, and FIG. **3***e* is a cross-sectional view taken along the line **3***e*-**3***e* in FIG. **3***c*;

FIGS. **4***a*-**4***f* are views of a bracket for use with the shank housing of FIGS. **3***a*-**3***e*-FIG. **4***a* is a perspective view, FIG. **4***b* is a top plan view, FIG. **4***c* is a side elevational view, FIG. **4***d* is another side elevational view, FIG. **4***e* is a cross-sectional view taken along the line **4***e*-**4***e* in FIG. **4***b*, and FIG. **4***f* is a cross-sectional view taken along the line **4***f*-**4***f* in FIG. **4***b*;

FIGS. **5***a*-**5***f* are views of a valve housing for use in the mounting system of FIG. **1**-FIG. **5***a* is a perspective view, FIG. **5***b* is a side elevational view, FIG. **5***c* is another side elevational view, FIG. **5***d* is a top plan view, FIG. **5***e* is a bottom plan view, and FIG. **5***f* is a cross-sectional view taken along the line **5***f*-**5***f* in FIG. **5***e*;

FIGS. **6***a*-**6***f* are views of a bracket for use with the valve housing of FIGS. **5***a*-**5***f*-FIG. **6***a* is a perspective view, FIG. **6***b* is a top plan view, FIG. **6***c* is a side elevational view, FIG. **6***d* is another side elevational view, FIG. **6***e* is a cross-sectional view taken along the line **6***e*-**6***e* in FIG. **6***b*, and FIG. **6***f* is a cross-sectional view taken along the line **6***f*-**6***f* in FIG. **6***b*;

FIGS. **7***a*-**7***g* are views of a bushing for use in the mounting system of FIG. **1**-FIG. **7***a* is a perspective view,

FIG. **7***b* is a top plan view, FIG. **7***c* is a side elevational view, FIG. **7***d* is another side elevational view, FIG. **7***e* is a cross-sectional view taken along the line **7***e*-**7***e* in FIG. **7***b*, FIG. **7***f* is a cross-sectional view taken along the line **7***f*-**7***f* in FIG. **7***b*, and FIG. **7***g* is a cross-sectional view taken along the line **7***g*-**7***g* in FIG. **7***b;*

FIG. **8** is a cross-sectional view of portions of the mounting system of FIG. **1**, where an underside of a mounting surface is even; and

FIG. **9** is a cross-sectional view of portions of the mounting system of FIG. **1**, where an underside of a mounting surface is uneven.

DETAILED DESCRIPTION

The present invention provides a mounting system for a plumbing fixture fitting that provides a secure mounting even when the mounting conditions are not optimal.

An exemplary embodiment of a mounting system **10** for a faucet **12** of the present invention is shown in FIGS. **1-9**. In the illustrated embodiment, the faucet **12** is a roman tub faucet. However, one of ordinary skill in the art will appreciate that the mounting system **10** could be used with any type of plumbing fixture fitting. Additionally, in the illustrated embodiment, the faucet **12** is mounted on a horizontal mounting surface, such as a tub deck or a countertop. However, one of ordinary skill in the art will appreciate that the mounting system **10** could be used with a plumbing fixture fitting mounted on a vertical mounting surface, such as a wall.

The faucet **12** includes a spout **14** and a pair of handles **16**. Each handle **16** is associated with a handle mounting system **18** that is mounted partially above and partially below the mounting surface. The handle mounting system **18** includes a valve housing **20**. The valve housing **20** houses a valve cartridge **22** and is connected to structure that enables the valve cartridge **22** to receive incoming water from a water supply source and provide outgoing water to the spout **14**. The spout **14** is associated with a spout mounting system **24** that is mounted partially above and partially below the mounting surface. The spout mounting system **24** includes a shank housing **26**. The shank housing **26** houses a shank **28** and is connected to structure that enables the spout **14** to receive incoming water from the valve cartridges **22** and provide outgoing water to a user of the faucet **12**.

Components of an exemplary embodiment of the mounting system **10** are shown in FIG. **2**. In the illustrated embodiment, the mounting system **10** includes a top nut **30**, a bracket **32**, a bushing **34**, and a bottom nut **36**. In FIG. **2**, the mounting system **10** is shown as used with the shank housing **26** for the spout **14**. However, one of ordinary skill in the art will appreciate that the components could be used with the valve housing **20** for the handle **16** as shown in FIG. **1**.

An exemplary embodiment of the shank housing **26** for the spout **14** is shown in FIGS. **3***a*-**3***e*. In an exemplary embodiment, the shank housing **26** has a generally cylindrical shape. The shank housing **26** includes a top end **38** and a bottom end **40**. The top end **38** is operable to be connected, either directly or indirectly, to the spout **14**. The shank housing **26** includes an outer surface **42** and an inner surface **44**. At least a portion of the outer surface **42** of the shank housing **26** is threaded. At least a portion of the outer surface **42** of the shank housing **26** has two opposing flats **46** extending between the top end **38** and the bottom end **40**. The shank housing **26** includes an inlet **48** in the bottom end **40**. The inlet **48** is operable to be connected, either directly or indirectly, to an inlet water line. The shank housing **26** includes an outlet **50** in the top end **38**. The outlet **50** is operable to be connected, either directly or indirectly, to a waterway in the spout **14**. The shank housing **26** can be formed of metal or any other suitable material. In an exemplary embodiment, the shank housing **26** is formed of a brass alloy.

An exemplary embodiment of the bracket **32** for use with the shank housing **26** of FIGS. **3***a*-**3***e* is shown in FIGS. **4***a*-**4***f*. The bracket **32** includes a base portion **52**, a protrusion **54**, and two side portions **56**. In an exemplary embodiment, the base portion **52** has a generally rectangular shape. However, one of ordinary skill in the art will appreciate that the base portion **52** could have other shapes. The base portion **52** has a top side **58** and a bottom side **60**. The base portion **52** also has a first side **62** and a second side **64**. The base portion **52** has an opening **66** extending from the top side **58** through the bottom side **60** between the first side **62** and the second side **64**. The opening **66** has a perimeter. In an exemplary embodiment, the opening **66** is generally non-circular. In an exemplary embodiment, the opening **66** is generally oval. The protrusion **54** extends upwardly from the top side **58** of the base portion **52** around at least a portion of the perimeter of the opening **66** in the base portion **52**. The protrusion **54** has a top side **68** and a bottom side **70**. The protrusion **54** has an outer surface **72** and an inner surface **74**. At least a portion of the inner surface **74** of the protrusion **54** tapers inwardly toward the top side **68**. In an exemplary embodiment, the protrusion **54** is generally non-circular. In an exemplary embodiment, the protrusion **54** is generally oval. In an exemplary embodiment, the protrusion **54** has two gaps **76** and a tooth **78** located in each gap **76**. The teeth **78** taper inwardly toward the top side **68** of the protrusion **54**. The side portions **56** extend upwardly from the top side **58** of the base portion **52** along the first side **62** and the second side **64** of the base portion **52**. The side portions **56** have a top side **80** and a bottom side **82**. The side portions **56** include teeth **84** extending upwardly from the top side **80**. The bracket **32** can be formed of metal or any other suitable material. In an exemplary embodiment, the bracket **32** is formed of an annealed stainless steel.

An exemplary embodiment of the valve housing **20** for the handle **16** is shown in FIGS. **5***a*-**5***f*. In an exemplary embodiment, the valve housing **20** has a generally cylindrical shape. The valve housing **20** includes a top end **86** and a bottom end **88**. The top end **86** is operable to be connected, either directly or indirectly, to the handle **16**. The valve housing **20** includes an outer surface **90** and an inner surface **92**. At least a portion of the outer surface **90** of the valve housing **20** is threaded. At least a portion of the outer surface **90** of the valve housing **20** has two opposing flats **94** extending between the top end **86** and the bottom end **88**. The valve housing **20** includes an inlet **96** in the bottom end **88**. The inlet **96** is operable to be connected, either directly or indirectly, to an inlet water line. The valve housing **20** includes an outlet **98** near the bottom end **88**. The outlet **98** is operable to be connected, either directly or indirectly, to an outlet water line. The valve housing **20** can be formed of metal or any other suitable material. In an exemplary embodiment, the valve housing **20** is formed of a brass alloy.

An exemplary embodiment of a bracket **32'** for use with the valve housing **20** of FIGS. **5***a*-**5***f* is shown in FIGS. **6***a*-**6***f*. The bracket **32'** includes a base portion **52'**, a protrusion **54'**, and two side portions **56'**. In an exemplary embodiment, the base portion **52'** has a generally rectangular shape. However, one of ordinary skill in the art will appreciate that the base portion **52'** could have other shapes. The base portion **52'** has

a top side **58'** and a bottom side **60'**. The base portion **52'** also has a first side **62'** and a second side **64'**. The base portion **52'** has an opening **66'** extending from the top side **58'** through the bottom side **60'** between the first side **62'** and the second side **64'**. The opening **66'** has a perimeter. In an exemplary embodiment, the opening **66'** is generally non-circular. In an exemplary embodiment, the opening **66'** is generally oval. The protrusion **54'** extends upwardly from the top side **58'** of the base portion **52'** around at least a portion of the perimeter of the opening **66'** in the base portion **52'**. The protrusion **54'** has a top side **68'** and a bottom side **70'**. The protrusion **54'** has an outer surface **72'** and an inner surface **74'**. At least a portion of the inner surface **74'** of the protrusion **54'** tapers inwardly toward the top side **68'**. In an exemplary embodiment, the protrusion **54'** is generally non-circular. In an exemplary embodiment, the protrusion **54'** is generally oval. In an exemplary embodiment, the protrusion **54'** has two gaps **76'** and a tooth **78'** located in each gap **76'**. The teeth **78'** taper inwardly toward the top side **68'** of the protrusion **54'**. The side portions **56'** extend upwardly from the top side **58'** of the base portion **52'** along the first side **62'** and the second side **64'** of the base portion **52'**. The side portions **56'** have a top side **80'** and a bottom side **82'**. The side portions **56'** include teeth **84'** extending upwardly from the top side **80'**. The bracket **32'** can be formed of metal or any other suitable material. In an exemplary embodiment, the bracket **32'** is formed of an annealed stainless steel.

An exemplary embodiment of the bushing **34** is shown in detail in FIGS. **7***a*-**7***g*. In an exemplary embodiment, the bushing **34** has a generally ring shape. The bushing **34** has a top side **100** and a bottom side **102**. The bushing **34** has an outer surface **104** and an inner surface **106**. In an exemplary embodiment, the outer surface **104** is generally non-circular. In an exemplary embodiment, the outer surface **104** is generally oval. At least a portion of the outer surface **104** of the bushing **34** tapers inwardly toward the top side **100**. In an exemplary embodiment, the outer surface **104** tapers inwardly from near a middle **108** of the outer surface **104** toward the top side **100** and from near the middle **108** of the outer surface **104** toward the bottom side **102**. In an exemplary embodiment, the inner surface **106** is generally circular. At least a portion of the inner surface **106** of the bushing **34** has two opposing flats **110** extending between the top side **100** and the bottom side **102**. The bushing **34** has a split **112**. In an exemplary embodiment, the split **112** is in one of the two opposing flats **110**. However, one of ordinary skill in the art will appreciate that the split **112** could be in any location around the bushing **34**. The bushing **34** can be formed of metal or any other suitable material. In an exemplary embodiment, the bushing **34** is formed of a brass alloy.

For ease of reference, throughout the rest of the specification and the claims, the mounting structure for the faucet component or other plumbing fixture fitting component will be referred to as a housing, regardless of whether the structure is the shank housing **26** for the spout **14**, the valve housing **20** for the handle **16**, or another housing for another plumbing fixture fitting component. Additionally, the plumbing fixture fitting will be referred to as a faucet, regardless of the type of plumbing fixture fitting.

To install a faucet component (such as the spout **14** or the handle **16**) using the mounting system **10**, the bottom nut **36**, the bushing **34**, and the bracket **32**, **32'** are placed onto the housing **20**, **26** for the faucet component **14**, **16** from the top end **38**, **86** of the housing **20**, **26**. The housing **20**, **26** is then inserted into a hole in the mounting surface (e.g., a tub deck, a countertop, or a wall) from below the mounting surface until the housing **20**, **26** is properly located relative to the mounting surface.

The top nut **30** is threaded onto the housing **20**, **26** from above the mounting surface securing the housing **20**, **26** to the mounting surface.

The bracket **32**, **32'** is then slid up the housing **20**, **26** until at least a portion of the bracket **32**, **32'** abuts the underside of the mounting surface. The teeth **84**, **84'** on the bracket **32**, **32'** resist rotation between the bracket **32**, **32'** and the underside of the mounting surface.

The bushing **34** is then slid up the housing **20**, **26** and into the protrusion **54**, **54'** on the bracket **32**, **32'**. The flats **46**, **94** on the outer surface **42**, **90** of the housing **20**, **26** align with the flats **110** on the inner surface **106** of the bushing **34**. The interaction of the flats **46**, **94** on the housing **20**, **26** with the flats **110** on the bushing **34** resists rotation between the housing **20**, **26** and the bushing **34**.

The bottom nut **36** is then threaded up the housing **20**, **26** securing the bracket **32**, **32'**, the bushing **34**, and the bottom nut **36** beneath the mounting surface. As the bottom nut **36** is threaded up the housing **20**, **26**, the bottom nut **36** will move the bushing **34** into the protrusion **54**, **54'** on the bracket **32**, **32'**. As the bushing **34** moves into the protrusion **54**, **54'**, the split **112** on the bushing **34** enables the bushing **34** to be compressed and move further into the protrusion **54**, **54'**. The interaction of the non-circular protrusion **54**, **54'** on the bracket **32**, **32'** with the non-circular bushing **34** resists rotation between the bracket **32**, **32'** and the bushing **34**. Additionally, the interaction of the tapered protrusion **54**, **54'** on the bracket **32**, **32'** with the tapered bushing **34** enables the bracket **32**, **32'** to pivot about the bushing **34** which, among other things, enables perpendicular installation of the housing **20**, **26** even when the underside of the mounting surface is uneven.

As can be seen in FIG. **8**, using the mounting system **10**, the faucet components **14**, **16** are securely mounted to the mounting surface. In FIG. **8**, the underside of the mounting surface is even. However, the underside of the mounting surface does not need to be even in order for the faucet components **14**, **16** to be securely mounted to the mounting surface. Using the mounting system **10**, if the underside of the mounting surface is uneven, the faucet components **14**, **16** can still be securely mounted to the mounting surface.

As can be seen in FIG. **9**, the underside of the mounting surface is uneven. Therefore, the bracket **32** is not completely flush with the underside of the mounting surface. Without the mounting system **10**, and in particular, the bracket **32** and the bushing **34**, the faucet component **14** may not be securely mounted. However, with the mounting system **10**, and in particular, the bracket **32** and the bushing **34**, the bracket **32** can be angled so that it can be as flush as possible with the underside of the mounting surface. Since the bracket **32** is as flush as possible, the faucet component **14** can be securely mounted to the mounting surface.

In describing the components of the mounting system **10**, terms describing the orientation of the components of the mounting system **10** are used. For example, the valve housing **20** and the shank housing **26** are described as having a top end and a bottom end. Similarly, the bracket **32**, **32'**, the protrusion **54**, **54'** on the bracket **32**, **32'**, the side portions **56**, **56'** of the bracket **32**, **32'**, and the bushing **34** are described as having a top side and a bottom side. Additionally, reference is made to mounting components above and below the mounting surface. Likewise, reference is made to moving components up and down the housing **20**, **26**. These and other terms describe the components of the mounting system

10 as oriented in the drawings. However, one of ordinary skill in the art will appreciate that the mounting system **10** could be oriented in any direction and that these terms are relative terms and are merely used for ease of reference in describing the components of the mounting system **10** and the installation of faucet components **14**, **16** using the mounting system **10**.

One of ordinary skill in the art will now appreciate that the present invention provides a mounting system for a plumbing fixture fitting that provides a secure mounting even when the mounting conditions are not optimal. Although the present invention has been shown and described with reference to a particular embodiment, equivalent alterations and modifications will occur to those skilled in the art upon reading and understanding this specification. The present invention includes all such equivalent alterations and modifications and is limited only by the scope of the following claims in light of their full scope of equivalents.

What is claimed is:

1. A plumbing fixture fitting, comprising:

a housing, the housing including a top end and a bottom end, the top end being operable to connect to a plumbing fixture fitting component, the bottom end being operable to connect to a water line, the housing including an outer surface and an inner surface;

a bracket, the bracket including a base portion and a protrusion, the base portion having a top side and a bottom side, the base portion having an opening extending from the top side through the bottom side, the opening having a perimeter, the protrusion extending from the base portion around at least a portion of the perimeter of the opening in the base portion, the protrusion having a top side and a bottom side, the protrusion having an outer surface and an inner surface, at least a portion of the inner surface of the protrusion tapering inwardly toward the top side; and

a bushing, the bushing having a top side and a bottom side, the bushing having an outer surface and an inner surface, at least a portion of the outer surface of the bushing tapering inwardly toward the top side;

wherein, during installation, the bracket slides on the housing until at least a portion of the bracket abuts an underside of a mounting surface;

wherein, during installation, the bushing slides on the housing and into the protrusion on the bracket; and

wherein the interaction of the tapered protrusion on the bracket with the tapered bushing enables the bracket to pivot about the bushing.

2. The plumbing fixture fitting of claim **1**,

wherein the bushing has a split; and

wherein the split in the bushing enables the bushing to be compressed and move further into the protrusion.

3. The plumbing fixture fitting of claim **1**,

wherein the inner surface of the protrusion is generally non-circular;

wherein the outer surface of the bushing is generally non-circular; and

wherein the interaction of the non-circular protrusion on the bracket with the non-circular bushing resists rotation between the bracket and the bushing.

4. The plumbing fixture fitting of claim **3**,

wherein the inner surface of the protrusion is generally oval; and

wherein the outer surface of the bushing is generally oval.

5. The plumbing fixture fitting of claim **1**,

wherein at least a portion of the outer surface of the housing has a flat extending between the top end and the bottom end;

wherein at least a portion of the inner surface of the bushing has a flat extending between the top side and the bottom side;

wherein the flat on the outer surface of the housing aligns with the flat on the inner surface of the bushing; and

wherein the interaction of the flat on the housing with the flat on the bushing resists rotation between the housing and the bushing.

6. The plumbing fixture fitting of claim **5**,

wherein at least a portion of the outer surface of the housing has two opposing flats extending between the top end and the bottom end; and

wherein at least a portion of the inner surface of the bushing has two opposing flats extending between the top side and the bottom side.

7. The plumbing fixture fitting of claim **1**,

wherein the bracket includes a side portion extending upwardly from the top side of the base portion;

wherein the side portion has a top side and a bottom side;

wherein the side portion includes teeth extending upwardly from the top side; and

wherein the teeth resist rotation between the bracket and the underside of the mounting surface.

8. The plumbing fixture fitting of claim **7**,

wherein the bracket includes a side; and

wherein the side portion extends upwardly from the top side of the base portion along the side of the base portion.

9. The plumbing fixture fitting of claim **1**,

wherein at least a portion of the outer surface of the bushing tapers inwardly toward the bottom side.

10. The plumbing fixture fitting of claim **1**,

wherein the inner surface of the bushing is generally circular.

11. The plumbing fixture fitting of claim **1**,

wherein at least a portion of the outer surface of the housing is threaded.

12. The plumbing fixture fitting of claim **11**,

further including a bottom nut;

wherein the bottom nut is operable to be threaded on the housing from below the mounting surface securing the bracket, the bushing, and the bottom nut beneath the mounting surface; and

wherein, as the bottom nut is threaded on the housing, the bottom nut moves the bushing into the protrusion on the bracket.

13. The plumbing fixture fitting of claim **11**,

further including a top nut;

wherein the top nut is operable to be threaded on the housing from above the mounting surface securing the housing to the mounting surface.

14. A mounting system for a plumbing fixture fitting, the mounting system comprising:

a bracket, the bracket including a base portion and a protrusion, the base portion having a top side and a bottom side, the base portion having an opening extending from the top side through the bottom side, the opening having a perimeter, the protrusion extending from the base portion around at least a portion of the perimeter of the opening in the base portion, the protrusion having a top side and a bottom side, the protrusion having an outer surface and an inner surface,

at least a portion of the inner surface of the protrusion tapering inwardly toward the top side; and

a bushing, the bushing having a top side and a bottom side, the bushing having an outer surface and an inner surface, at least a portion of the outer surface of the bushing tapering inwardly toward the top side;

wherein, during installation, the bracket slides on a housing for a plumbing fixture fitting until at least a portion of the bracket abuts an underside of a mounting surface;

wherein, during installation, the bushing slides on the housing and into the protrusion on the bracket; and

wherein the interaction of the tapered protrusion on the bracket with the tapered bushing enables the bracket to pivot about the bushing.

15. The mounting system of claim **14**,

wherein the bushing has a split; and

wherein the split in the bushing enables the bushing to be compressed and move further into the protrusion.

16. The mounting system of claim **14**,

wherein the inner surface of the protrusion is generally non-circular;

wherein the outer surface of the bushing is generally non-circular; and

wherein the interaction of the non-circular protrusion on the bracket with the non-circular bushing resists rotation between the bracket and the bushing.

17. The mounting system of claim **14**,

wherein at least a portion of the outer surface of the housing has a flat extending between the top end and the bottom end;

wherein at least a portion of the inner surface of the bushing has a flat extending between the top side and the bottom side;

wherein the flat on the outer surface of the housing aligns with the flat on the inner surface of the bushing; and

wherein the interaction of the flat on the housing with the flat on the bushing resists rotation between the housing and the bushing.

18. The mounting system of claim **14**,

wherein the bracket includes a side portion extending upwardly from the top side of the base portion;

wherein the side portion has a top side and a bottom side;

wherein the side portion includes teeth extending upwardly from the top side; and

wherein the teeth resist rotation between the bracket and the underside of the mounting surface.

19. The mounting system of claim **14**,

further including a bottom nut;

wherein at least a portion of the outer surface of the housing is threaded;

wherein the bottom nut is operable to be threaded on the housing from below the mounting surface securing the bracket, the bushing, and the bottom nut beneath the mounting surface; and

wherein, as the bottom nut is threaded on the housing, the bottom nut moves the bushing into the protrusion on the bracket.

20. A mounting system for a plumbing fixture fitting, the mounting system comprising:

a bracket, the bracket including a base portion and a protrusion, the base portion having a top side and a bottom side, the base portion having an opening extending from the top side through the bottom side, the opening having a perimeter, the protrusion extending from the base portion around at least a portion of the perimeter of the opening in the base portion, the protrusion having a top side and a bottom side, the protrusion having an outer surface and an inner surface, at least a portion of the inner surface of the protrusion tapering inwardly toward the top side, the inner surface of the protrusion being generally non-circular; and

a bushing, the bushing having a top side and a bottom side, the bushing having an outer surface and an inner surface, at least a portion of the outer surface of the bushing tapering inwardly toward the top side, the outer surface of the bushing being generally non-circular, the bushing having a split;

wherein, during installation, the bracket slides on a housing for a plumbing fixture fitting until at least a portion of the bracket abuts an underside of a mounting surface;

wherein, during installation, the bushing slides on the housing and into the protrusion on the bracket;

wherein the split in the bushing enables the bushing to be compressed and move further into the protrusion;

wherein the interaction of the tapered protrusion on the bracket with the tapered bushing enables the bracket to pivot about the bushing; and

wherein the interaction of the non-circular protrusion on the bracket with the non-circular bushing resists rotation between the bracket and the bushing.

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